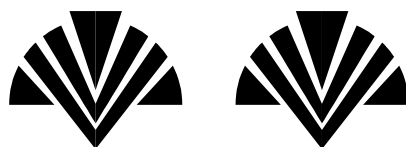


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# **THE ENHANCED SCHOOL HEALTH SERVICES PROGRAM DATA REPORT**



## **2001-2002 School Year**

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**Massachusetts Department of Public Health  
Bureau of Family and Community Health  
Applied Statistics, Evaluation and Technical Services  
February 2003**





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## **2001-2002 School Year**

Mitt Romney, Governor  
Ronald Preston, Secretary of Health and Human Services  
Christine C. Ferguson, Commissioner of Public Health  
Deborah Klein Walker, Associate Commissioner for Programs and Prevention  
Sally Fogerty, Assistant Commissioner, Bureau of Family and Community Health  
Nancy Wilber, Director, Applied Statistics, Evaluation and Technical Services

Massachusetts Department of Public Health  
Bureau of Family and Community Health  
Applied Statistics, Evaluation and Technical Services

February 2003

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# Introduction

In recent years four major changes have dramatically affected school health services: (a) changes in family structure and patterns of parental employment, (b) the impact of diverse cultural and linguistic groups, (c) an increase in the number and severity of illness in students with special health care needs who are enrolled in schools, and (d) the rise of social morbidities such as substance abuse, depression, and violence among children.

These changes have resulted in an increased demand for health services in the schools:

- With more working parents, children who are sick with mild or chronic conditions are less likely to be monitored at home on school days and more likely to be sent to the school nurse for assessment and a determination as to whether they need to see a physician (Thurber et al., 1991; Uphold & Graham, 1993; U.S. Census Bureau, 2000; Wold, 2001).
- Some “newcomer” groups rely on the school as a source of information about what services or providers are available in the community. They may not understand how to obtain care elsewhere because of language or cultural barriers and therefore may look to the school health service for assistance.
- Improved medical technology has enhanced the health of children and adolescents with a variety of conditions and diseases previously associated with short life expectancy, e.g., cystic fibrosis, childhood leukemia, diabetes, juvenile rheumatoid arthritis and kidney disease. In addition, children assisted with medical technology, e.g., catheterizations, tracheostomies, ventilators, etc., are now attending school. Enhanced social attitudes promoting inclusion, as well as state and national laws related to disability rights and access to education, have resulted in more children requiring nursing care and other health-related services during the school day (Palfrey et al., 1992; Small et al., 1995).
- Students spend a large part of their day at school; therefore, the school can be an important site where health and education risks, e.g., depression, absenteeism, substance use, may be identified and pro-active interventions initiated. This can result in increased demands on professional health services in the schools (Thurber et al., 1991).
- The rapid restructuring of the health care delivery system has dramatically impacted school health service programs. With reduced hospitalizations and/or reduced lengths of stay, school nurses are often responsible for supervising the care of children whose illnesses, e.g., acute asthma and diabetes, were formerly managed in a hospital setting (Chabra et al., 2000; Leslie et al., 1998; Schutte et al., 1997).

The Department of Public Health recognizes the need for quality school health services and provides consultation to all of the Commonwealth’s school districts. Since 1993, with resources from the Health Protection Fund, the Department of Public Health has extended to a number of school systems the opportunity to expand on the basic school health services model by establishing the Enhanced School Health Service Program (ESHS). The goals of the Enhanced School Health Service model are to



(a) provide high quality school health services to all children within the community, (b) support the educational process, and (c) link the school health service programs to all aspects of the health care delivery system, serving children and their families.

In 1993, thirty-six school districts were funded for three and half years to: (a) strengthen the infrastructure of school health services in the area of personnel and policy development, programming, and interdisciplinary collaboration; (b) incorporate health education programs, including tobacco prevention and cessation programs, into the existing school health programs; and (c) develop linkages between school health service programs and community health care providers.

In October 1997, the Department funded 19 school districts (with 18 separate contracts<sup>1</sup>) under the Enhanced model (Enhanced School Health Services, ESHS) and 8 school districts with experience in developing the Enhanced model to provide consultation to approximately 42 additional school districts (“recipient schools”) across the Commonwealth (Enhanced School Health Services with Consultation, ESHSC). These recipient school districts were interested in developing similar school health service programs.

In November 1999 the Massachusetts legislature allocated additional funding to the Enhanced School Health Service Programs (ESHS and ESHSC). School systems for both models were selected for participation through a competitive bid process based on a Request for Response (RFR) developed by the Massachusetts Department of Public Health (MDPH). As a result of 1999 RFR process, a total of 77 school districts (or affiliated school systems)<sup>2</sup> received awards in 2000: 11 Enhanced School Health Services with Consultation and 66 basic Enhanced Programs (see **Appendix A**). An added component of the 1999 RFR was that each applicant public school district was required to provide some elements of basic school health services (vision/hearing screening, immunization review, etc.) to all non-public and charter schools within the community (77 award recipients in 2000 served 253 non-public and charter schools)<sup>3</sup>. An additional 32 school districts received awards in 2001; all of these were basic Enhanced Programs. The staff of the School Health Unit, Division of Child and Adolescent Services within the MDPH Bureau of Family and Community Health, administer the programs.

## Data Collection Methods

Contractual obligations require districts in the ESHS and ESHSC programs to submit activity reports once a month to MDPH. The **monthly activities report** provides a summary of the number of health services activities, medication management services, medical procedures, case management activities, and tobacco prevention services that took place during the prior month.

In addition, districts in the ESHS and ESHSC programs submit **status reports** once a year. This report measures progress in meeting program objectives, and includes performance measures relating to health services infrastructure, MIS development, linkages to all aspects of the health delivery system, and quality evaluation. It also summarizes the number of health screenings performed and health surveys administered during the school year. The recipient school districts in the ESHSC program submit this report once a year.

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<sup>1</sup> One ESHS contract may fund multiple districts.

<sup>2</sup> ESHS funding was awarded to local public school systems, regional academic school systems, independent vocational systems, vocational-technical regional systems, and school unions.

<sup>3</sup> 223 non-public schools, 30 charter schools.

Data from the monthly activities reports submitted by ESHS/ESHSC program districts during the 2001-2002 school year is the primary source of information for the statistics presented here. The summary statistics contained in this report were generated from monthly reports submitted during the entire school year—September 1, 2001 to June 30, 2002 (ten months). *Note that the statistics presented in the 1997-1998 and earlier editions of the annual data report only covered the January 1 - April 30 time period (four months).*<sup>4</sup> As a result, the reader is advised to exercise caution when comparing the statistics in this report to statistics published in the earlier reports. In most cases, direct comparisons should be avoided.

Over the course of the 2001-2002 school year, monthly encounter data were collected successfully from 109 of the 109 ESHS award recipients that were required to submit data (100% of program total), serving a total of **566,801 enrolled students** (58.2% of the state public school enrollment total). Because one award funds two districts, these 109 recipients include a total of 110 school districts, and for analytical purposes it is these 110 districts that are referenced throughout the remainder of this report. For the 110 school systems that submitted data during the 10-month period, MDPH received a very high proportion (98.0%) of the 1100 expected monthly reports. For consistency, missing data from the monthly reports that were not received were filled with seasonally adjusted district averages.

For the 110 districts that form the basis of this report, the median student enrollment was 3,469, with a range of 296 to 62,414 students. Urban, suburban, and rural districts were represented in these samples, as were regional and vocational school systems.

## Data Analysis Methods

In order to reduce the potential for confusion, the statistical concepts and terms used in this report are described below.

For each measurement or “indicator,” a ***district-level statistic*** is determined in each district by calculating a monthly average for the 10-month evaluation period. The **monthly average** for a particular district is calculated by adding the total number of events or encounters that occurred in a particular district during the evaluation period and dividing that total by the number of months included in that evaluation period. Because it is awkward to refer constantly to the “monthly average for the district” or the “district-based monthly average,” these data are referred to as the **district average**. These two terms--the monthly average and district average--are used interchangeably in this report. All monthly averages in this report were calculated over the same ten-month period (September to June).

Wherever possible, standard units of analyses (*rates*) are used, as they facilitate both cross-district and historical comparisons, which can provide context and meaning to the statistics. The standard units of analysis that were used most frequently in this report are the monthly rate per 1,000 student health encounters, the monthly rate per 1,000 enrolled students, and the monthly rate per full-time equivalent (FTE) nurse. The **monthly rate per 1,000 student health encounters** is calculated by dividing the monthly average for that indicator by the total number of student health encounters in that district and multiplying the result by 1,000. Similarly, the **monthly rate per 1,000 enrolled students** is calculated by dividing the monthly average by the total number of enrolled students in that district and multiplying

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<sup>4</sup> This applies to the annual data reports covering the 1995-1996, 1996-1997, and 1997-1998 school years.

the result by 1,000. Rates per thousand enrolled students were calculated utilizing October 2001 student enrollment figures provided by the Massachusetts Department of Education (see Appendix A). Finally, the **monthly rate per full-time equivalent (FTE) nurse** is calculated by dividing the monthly average by the total number of Registered Nurse FTEs in that district. Sometimes the rate is not based on an average of *monthly* data but on *full school year* data. For example, the **rate of health screenings per 1,000 students** is determined by dividing the total number of screenings *that year* by the number of students and multiplying the result by 1,000.

**Program-wide** statistics describe not individual districts, but the ESHS/ESHSC program as a whole. In these calculations, each district represents a data point that is used in calculating summary statistics. For example, if averages are calculated for 100 districts, the result is a collection of 100 district averages that can be arrayed from lowest to highest along a frequency distribution. When frequency distributions are *skewed* (that is, the values tend to clump around either the lowest or highest value, rather than around the middle), the *median*, rather than the *average*, is used to measure central tendency. *Because most of the ESHS/ESHSC frequency distributions were skewed, the median is used throughout this report.* The **median** represents the number above and below which exactly 50% of the districts fall. It is a better measure of central tendency than the *average* for skewed data, because the average tends to be more affected by extreme values. The most common use of median in this report is with district-based monthly averages; for a particular indicator, the median for the group of ESHS/ESHSC districts (a *program-level* statistic) is the district average (or monthly average) above and below which exactly 50% of the individual district averages fell. The **range** of a set of district averages refers to the lowest and highest values across the entire group of ESHS/ESHSC districts. The district with the median value for an indicator is sometimes referred to as the **median district**. The median value across all the monthly district averages is also referred to as the **median district average**.

Medians can also be calculated for rates. For example, the **median Emergency Referral rate** (i.e., Emergency Referrals per 1,000 health encounters) is calculated by first putting the total number of Emergency Referrals in the form of a rate (for each district, dividing the total number of Emergency Referrals by the number of student health encounters and multiplying by 1,000), and then finding the median of these rates.

## Data Limitations

*This report focuses exclusively on the delivery of school health services by nursing staff. In addition, because project sites were not selected to serve as a representative sample of the Commonwealth, this summary is descriptive in nature and is not intended to be used to make generalized statements about health services in all Massachusetts public schools.* Furthermore, many of the statistics presented in this year's report should not be directly compared to statistics presented in past reports. This is because different school districts have participated in the program in different years, not all school districts involved in the program in a given year submitted complete data, and the statistics presented in the reports were calculated from data collected in different portions of the school year (from either a 4-month or a 10-month period). The descriptive data presented here also do not capture the dynamic and multi-faceted nature of health services delivery in a school system, which would require in-depth qualitative analysis of the program participants. Furthermore, a small percentage of the school districts in the program did not have computerized records of office visits and relied on paper logs and hand tallying of data by individual nurses. In these cases, it is impossible to control for factors such as data-entry errors at the district level, consistent misinterpretation of data elements, and numerical

“guesstimates” provided by participants. Some of these data quality problems can lead to significant under- or over-counting. Finally, interpretation of the data is limited because we have not attempted to analyze the influence of school district demographics or other participant differences.

Participating districts were required to implement, in a short period of time, both program innovations that entailed major organizational change and, in most cases, the development of an internal data collection system (see **Appendix B**). Therefore, this report represents a preliminary attempt to measure the health services activity in participating school systems. Improvements in data collection procedures, data collection tools, and data collection instructions and training occur on a continuing basis, leading to corresponding improvements in data validity and reliability.

# Findings

## School Nurse Staffing Patterns

For the 110 ESHS/ESHSC districts whose data contributed to this report, the equivalent of **1,283.6** full-time school nurses served a total of **566,801** students during the 2001-2002 school year.<sup>5</sup>

As a result of ESHSP funding, **239.7** school nurse full-time equivalents (FTEs) were added to school systems. Funding sources for the total school nurse FTEs in the districts can be broken down as follows:

- **239.7 (18.7%)** were funded by the MDPH Enhanced School Health Services Program;
- **1,043.9 (81.3%)** were funded through local school budgets and other sources.

The ESHSP median was **398.2** students per nurse, a ratio between that recommended by the American Nurses Association (ANA) for regular education populations (**1 to 750**) and that recommended for special populations (**1:225**) or for severely/profoundly disabled populations (**1:125**).<sup>6</sup> Across the 110 districts, nurse to student ratios ranged from **1:148 to 1:872**; only one of these ESHSP districts had a nurse to student ratio that fell below the ANA guidelines for regular student populations.

## School Health Services Activity

The primary goals of the Enhanced School Health Services Program are to reinforce the infrastructures of existing school health services programs and to improve the delivery of health services to students. Toward that end, program participants were required to assess over time the type and scope of school nursing activity in their districts. These activities were divided into seven categories of data:

**1) health encounters, 2) injury reports, early dismissals, and referrals for emergency health services, 3) medication management, 4) health screenings, 5) medical procedures, 6) linkages, and 7) nursing case management.** *Unless otherwise specified, the following data provide a full **ten-month overview** of the health services activity in these districts during the 2001-02 school year.*

### Health Encounters

Districts tracked on a monthly basis the total number of student health encounters. An “encounter” was defined as *any contact with a student during which the school nurse provided counseling, treatment, or aid of any kind*. Casual conversations fell outside this definition and were not counted. In addition, mandatory screenings were not counted because these are routine population-based activities; these types of services were tracked separately, however.

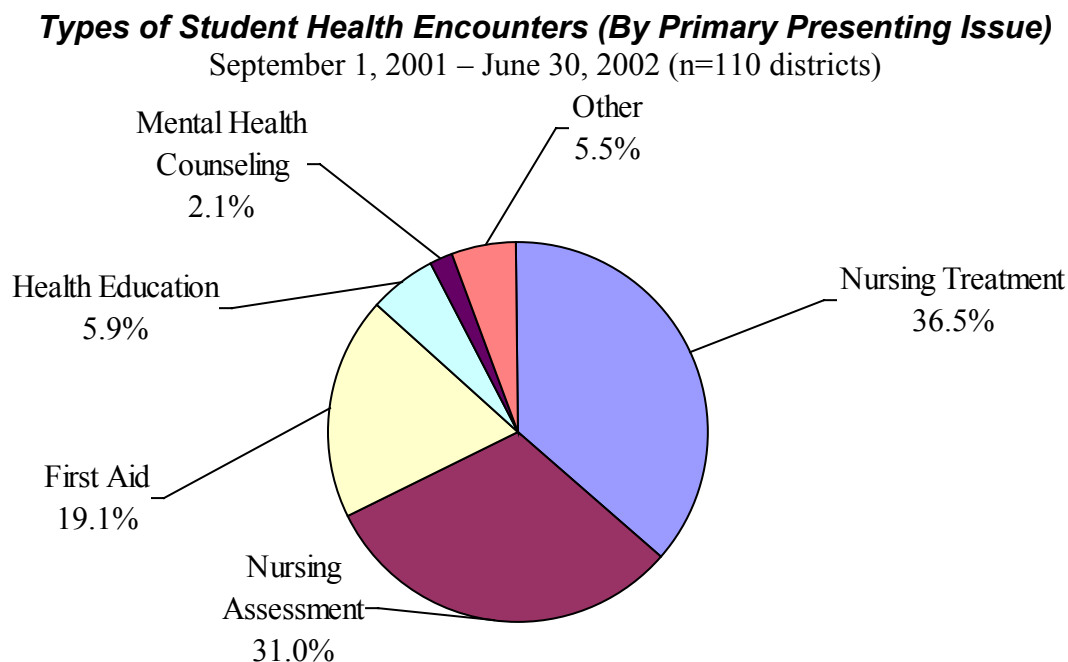
Between September 1, 2001 and June 30, 2002, 110 school districts reported a combined total of **7,146,585** student health encounters (see table below). Monthly averages for individual districts for this 10-month period ranged from **275.3** encounters per month to **42,411.4** encounters per month, with the median being an average of **4,634.3** encounters per month. While some students may need to be seen

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<sup>5</sup> These statistics include data from the ESHSC *lead* districts, but do not include data from the ESHSC *recipient* districts. The count of "School Nurses" includes only Registered Nurses (RNs) and nurse leaders, but excludes other health support staff which may have been funded by the ESHS contract.

<sup>6</sup> American Nurses Association. *Standards of School Nursing Practice*, Kansas City, MO, 1983. In addition, the ESHS program recommends 1 FTE nurse in each building with 250-500 students with 0.1 FTE for each additional 50 students.

several times each month, others need not be seen at all. Over the ten-month period, the median number of health encounters per student was **1.3 health encounters per student** per month (range: **0.7 to 3.2**). For nurses, the median encounter rate was **535.2 student health encounters per full-time school nurse** per month (range: **137.7 to 1,425.1**).<sup>7</sup> “Nursing treatment,” “nursing assessment, triage, and reassessment,” and “first aid” were the most common primary reasons for visits to the school nurse (see the figure below).



“Nursing Assessment” includes assessment, triage, and reassessment of illness by nurses. “Nursing treatment” includes medication administration, as well as nursing procedures and immunization administration.

In some encounters, students reported more than one type of health complaint; **1,113,893** additional services were provided for these secondary issues. Whereas “individual health education” and “mental health counseling” accounted for a relatively small proportion of the “primary” reasons for student health encounters, these issues were more likely to be uncovered when measuring “secondary” reasons for health encounters (see table below).

<sup>7</sup> For these calculations, “school nurses” includes only RNs and nurse leaders.

**Number and Percentage of Student Health Encounters  
September 1, 2001 - June 30, 2002 (n=110 districts)**

	Nursing Assess- ment*	Nursing Treat- ment*	First Aid	Individual Health Education	Mental Health Counseling	Other	TOTAL
<b>Primary Issue</b>	2,211,898	2,606,957	1,365,335	420,658	147,969	393,768	7,146,585
<b>Percent of total</b>	31.0%	36.5%	19.1%	5.9%	2.1%	5.5%	100.0%
<b>Secondary Issue</b>	212,125	154,667	123,273	438,120	76,304	109,404	1,113,893
<b>Percent of total</b>	19.0%	13.9%	11.1%	39.3%	6.9%	9.8%	100.0%

\* "Nursing Assessment" includes assessment, triage, and reassessment of illness by nurses. "Nursing Treatment" includes medication administration, as well as nursing procedures and immunization administration.

Health service encounters with school staff (i.e., teachers and administrators) regarding their *own* health issues were also monitored by school systems. During the school year, school nurses in 110 districts managed a total of **200,220** staff health encounters (see table below). Monthly averages for staff health encounters among the 110 school districts ranged from **5.2** to **2,289.1** staff health encounters per month. The median monthly average for a single district was **130.2** staff health encounters per month. The median monthly average *per full-time school nurse* was **13.1** staff health encounters per nurse each month.

**Number and Percentage of Staff Health Encounters  
September 1, 2001 - June 30, 2002 (n=110 districts)**

	Nursing Assess- ment*	Nursing Treat- ment	First Aid	Individual Health Education	Mental Health Counseling	Other	TOTAL
<b>Encounters</b>	51,681	60,091	34,224	30,736	11,666	11,822	200,220
<b>Percent of total</b>	25.8%	30.0%	17.1%	15.4%	5.9%	5.9%	100.0%

\* Includes nursing assessment, triage, and reassessment of illness by nurses

**Injury Reports, Early Dismissals, and Referrals for Emergency Health Services**

An important function of school nursing practice is to provide on-site health services to students who are sick, injured, or experiencing a serious health emergency. Each month sites tallied the number of on-campus student injury reports, early dismissals due to illness, and referrals for emergency health services in their districts. These events represent a small subset of the total number of student health encounters in a school system. For the entire school year, 110 districts reported:

- a total of **263,210** *injury reports* with the median district reporting **42.1** reports per month (range: **1.0** to **1,659.8** reports per month);<sup>8</sup>
- a total of **336,022** *early dismissals due to illness* with the median district reporting **218.9** dismissals per month (range: **17.6** to **1,809.7** dismissals per month);
- a total of **25,267** *early dismissals due to injury* with the median district reporting **13.3** dismissals per month (range: **0.7** to **343.4** dismissals per month);

<sup>8</sup> Because the definition of "injury reports" changed subsequent to the 1999-2000 report, these numbers cannot be compared to data prior to 2000-2001.

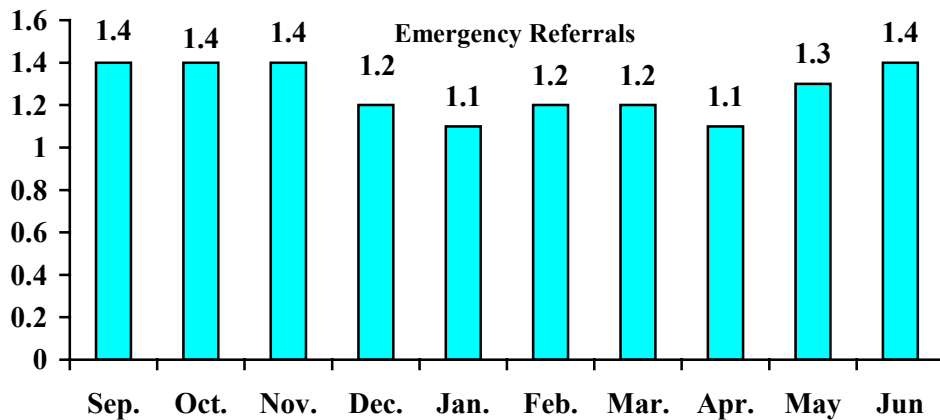
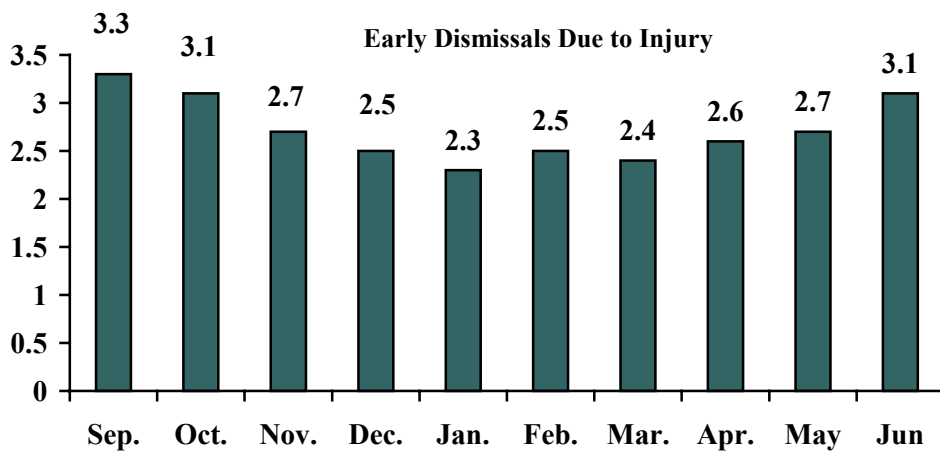
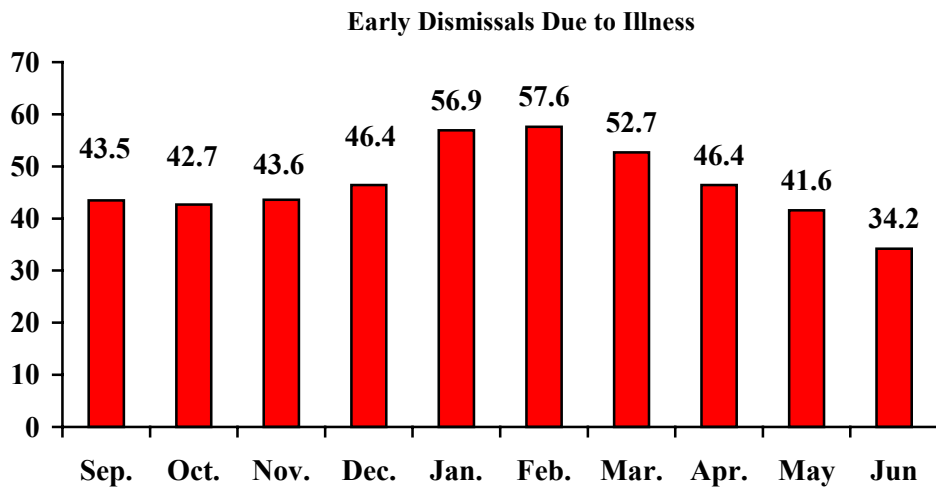
- a total of **14,130** *referrals for emergency health services* with the median district reporting **6.3** referrals per month (range: **0.1 to 155.8** referrals per month).

The following graph compares, *for every 1,000 student health encounters*, the median rates of student early dismissals due to illness and referrals for emergency health services in the 110 school districts for the time period September 1, 2001 - June 30, 2002:



## Student Early Dismissals and Referrals for Emergency Health Services:

*Median Number of Incidents Per 1,000 Student Health Encounters*  
September 1, 2001 – June 30, 2002 (n=110 districts)



### ***Medication Management***

In 1993, the Massachusetts Department of Public Health promulgated regulations governing the administration of medications in public and private schools. The purpose of these regulations (105 CMR 210.000) is to provide minimum safety standards for the administration of prescription medications to students during the school day.

The school nurse's role in managing the medication administration program for the district is broad in scope. In addition to developing district-wide medication policies in collaboration with the school committee, school administration, and school physician, the school nurse:

- administers medications to students (including monitoring students' response to medications);
- delegates the administration of selected medications to appropriately trained school staff (if the district is registered with the MDPH to do so);
- ensures the proper training and supervision of these designated staff; and
- establishes a formal record-keeping system for the district's medication administration program.

ESHS districts tracked the number of *students* using prescription medications as well as the number of *prescriptions* that had been ordered for their students. Implicit in the description of medication administration is the nurses' responsibility for the following: development of the medication administration plan, assessment of the child prior to administering each medication, and follow-up evaluation of medication efficacy and side effects.

During the school year, 110 districts reported a total of **33,076 students** using prescription medications in an average month, with the median district reporting a monthly average of **209.3** students (range: **3 to 3,725**). The average number of *prescriptions* for the ESHS program was derived by calculating for each district the monthly average number of prescriptions for each medication type and then summing these averages across all the districts. Note that the number of *students* with prescriptions does not equal the number of *prescriptions* because some students had more than one prescription. Among prescriptions taken on a scheduled, daily basis, psychotropic medications were the most common, while among prescriptions taken on an “as-needed” (PRN) basis, asthma medications were the most common (see table below).<sup>9</sup>

**Number of Student Prescriptions Reported to School Nurses (Monthly Average)  
September 1, 2001 - June 30, 2002 (n=110 districts)**

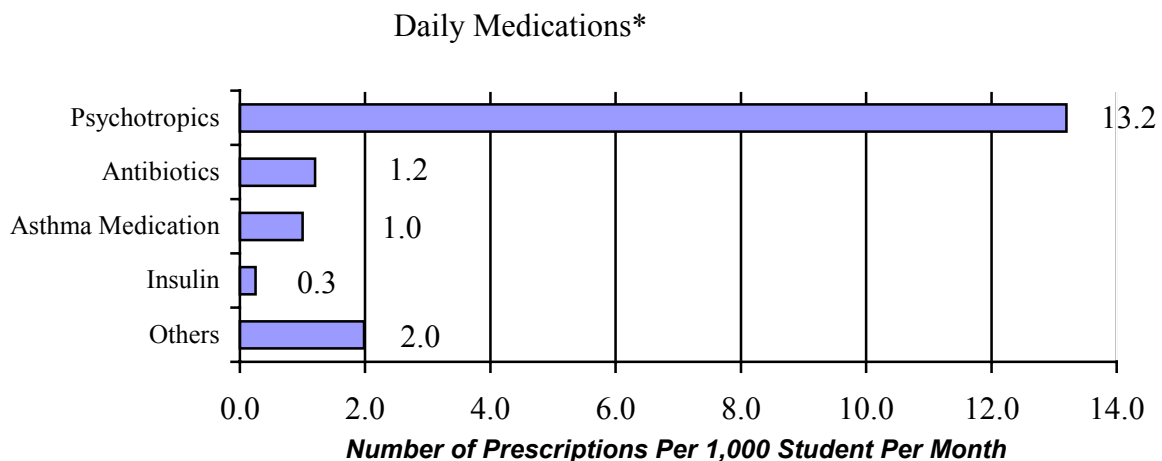
	Anti-biotics	Asthma	Epi-nephrine	Insulin	Psycho-tropic	Others	Total
<b>Daily Medications</b>							
<b>All Districts</b>	643.0	830.6	31.7	230.5	8,809.3	1,608.0	12,153.1
<b>Median District</b>	4	3	0	1	45	7	30.8%
<b>Lowest Value</b>	0	0	0	0	0	0	
<b>Highest Value</b>	73	156	10	16	1,118	359	
<b>PRN Medications</b>							
<b>All Districts</b>	235.8	14,884.8	4,135.7	456.4	467.1	7,184.1	27,363.9
<b>Median District</b>	1	99	31	3	2	38	69.2%
<b>Lowest Value</b>	0	12	0	0	0	0	
<b>Highest Value</b>	60	1,905	229	36	72	481	
							39,517

PRN refers to medications taken on an "as-needed" basis.

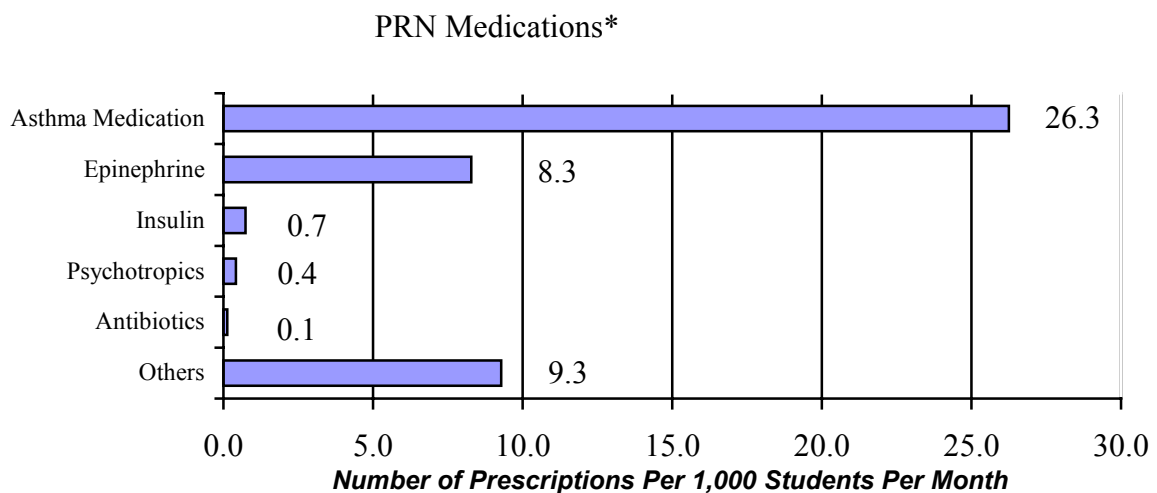
<sup>9</sup> PRN is an abbreviation for “pro re nada,” a Latin term meaning “as needed.” PRN medications are not scheduled for set times, but given as needed. For example, an analgesic medication that is given whenever pain or discomfort occurs is considered a PRN medication.

The following figure compares, across 110 school systems, prescription rates (the median number of students on prescription medications each month per 1,000 students in the district) for four types of medications. These numbers reflect the students *known by school nurses* to be on prescription medication; they most likely *underestimate* the true number because students who self-administer do not always come to the attention of school nurses.<sup>10</sup>

**Number of Prescriptions for Medications  
Median Monthly Rate Per 1,000 Students  
September 1, 2001 - June 30, 2002 (n=110 districts)**



\*The decrease in psychotropics from the 2000-2001 school year (a median monthly rate of 21.0 per 1,000 students) may be due to the use of new one-dose slow-release drugs which are administered at home and are not reported to school nurses.



\*PRN refers to medications taken on an "as-needed" basis.

<sup>10</sup> Regulations require that students inform nurses about self-administered medications. If students do not comply with regulations, these medications may not come to the attention of school nurses.

School nurses in the 110 ESHS districts administered **209,385.1** doses of medication to students per month. The majority of these were psychotropic medications, followed by over-the-counter (OTC) medications and asthma medications (see table below).

**Number of Medication Doses Administered to Students by School Nurses  
(Monthly Average)**

**September 1, 2001 - June 30, 2002 (n=110 districts)**

	Anti-biotics	Asthma Medication	Epi-nephrine	Insulin	Psycho-tropic	OTC	Others	Total
<b>All Districts</b>	3,382.8	20,902.5	18.5	3,504.9	121,191.3	35,352.2	25,032.9	209,385.1
<b>Median District</b>	19.9	110.1	0.0	19.4	629.3	210.2	110.4	1,099.3
Includes supervised self-administration								

**Health Screenings**

Public schools in Massachusetts are required by law to conduct postural, hearing, and vision screening on all students.<sup>11</sup> Some school systems have also opted to conduct voluntary health screenings based on the particular health needs of their students. School nurses are responsible for ensuring that these screenings are completed and for referring students for follow-up care when needed. During the school year, school nurses at 110 districts conducted the following number of required and voluntary student health screenings. These numbers represent *initial* screenings, and do not include *re-screenings*:

**Yearly Student Health Screenings**

**September 1, 2001 - June 30, 2002 (n=110 districts)**

Type of Screening	Screenings	Screenings Per 1,000 Students			% of Districts Reporting 1 or More
	All Districts	Median District	Lowest Value	Highest Value*	
<b>Vision</b>	395,330	757.0	273.5	1,302.0	97.3%
<b>Hearing</b>	359,807	740.7	214.2	1,150.6	97.3%
<b>Height/Weight</b>	290,428	604.6	16.1	1,962.2	96.4%
<b>Postural</b>	172,570	365.2	62.2	872.6	96.4%
<b>Dental</b>	51,447	58.2	0.1	991.0	53.6%
<b>Nutritional</b>	33,773	29.7	0.2	649.4	67.3%

Medians and ranges excluded districts that did not track that type of screening.

\* Note: Rates may exceed 1,000 screenings per 1,000 students because of student transfers into the district.

School nurses also performed pediculosis screenings. For the 86 districts that performed these screenings each month, the average number of screenings per month, including initial screenings and re-screenings, totaled **25,976.9** (range: 2.4 to 2,638.1).

<sup>11</sup> The law permits waivers under certain circumstances. Postural screenings of students in grades 5 through 9 may not be waived, however.

## Medical Procedures

The enrollment of children assisted by medical technology in the public school system has increased in recent years. This phenomenon presents multiple challenges for school administrators, parents and guardians, school health services personnel, teachers, and students. ESHSP school districts collected data on students assisted by medical technology and reported the following:

### Summary of Medical Procedure Activity September 1, 2001 - June 30, 2002 (n=110 districts)

Type of Procedure	Average # of Procedures Per Month				Average # of Students Per Month	Average # Minutes/ Procedure	% of Districts Per-forming Procedure
	All Districts	Median District	Lowest Value	Highest Value	All Districts	Median District*	
Glucometer Testing	17,469.3	123.4	0.0	1,117.6	1,082.2	4.7	98.2%
Blood Pressure Check	6,165.7	28.5	0.3	987.8	4,471.0	3.1	100.0%
Peak Flow Check	4,354.2	14.6	0.0	909.0	1,494.5	3.5	93.6%
Nasogastric/Gastric Tube	2,814.0	0.1	0.0	561.6	149.6	15.0	50.0%
Catheterization/Catheter	2,452.7	1.2	0.0	455.8	134.9	11.3	53.6%
Nebulizer Treatment	1,773.6	5.2	0.0	347.8	578.8	13.8	94.6%
Chest Physiotherapy	423.7	0.0	0.0	80.8	73.9	9.3	28.2%
Suction	673.9	0.0	0.0	222.0	34.0	5.5	24.6%
Colostomy/Ileostomy Care	345.5	0.0	0.0	68.3	22.2	10.0	20.9%
Oxygen Care	178.2	0.0	0.0	57.8	26.5	5.5	30.0%
Tracheostomy Care	213.0	0.0	0.0	40.4	15.9	6.1	19.1%
Urostomy Care	89.9	0.0	0.0	27.8	6.3	8.0	7.3%

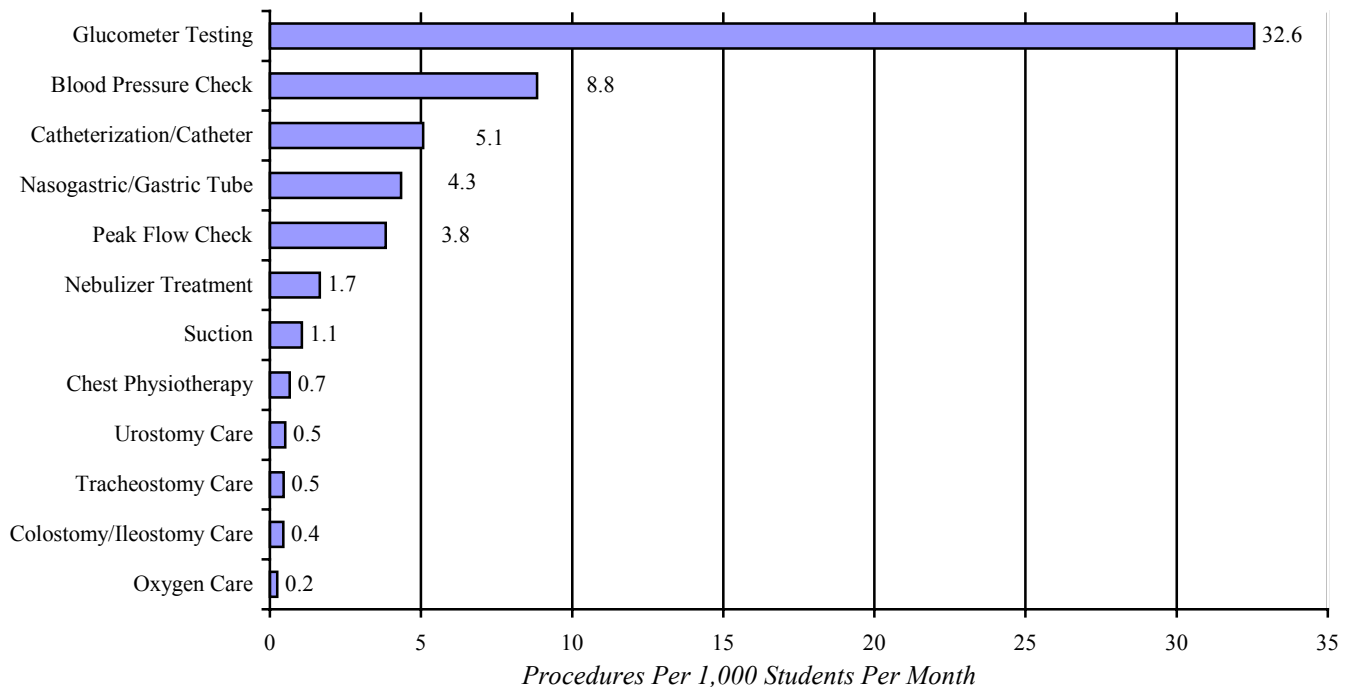
Note 1: "All districts"-- numbers under this subheading are calculated as follows: first, the total number of procedures across all districts is calculated for each month, then a "monthly average" of these totals is calculated.

Note 2: "Average # Minutes/Procedure" – In this case, the median was taken only from those districts where the procedure was performed at least once.

For the common procedures listed in the table above, the *median monthly number of procedures* for districts in the program was **232.7** procedures per month; the median number of medical procedures *per full-time nurse* each month was **25.3** procedures.

Monthly medical procedure rates per 1,000 enrolled students are shown in the figure below:

**Medical Procedure Rates\***  
**Number of Procedures Per 1,000 Enrolled Students Per Month (Median Rate)**  
**September 1, 2001 - June 30, 2002 (n=110 districts)**



The lowest and highest values for these rates are summarized in the table below:

**Medical Procedure Rates\***  
**September 1, 2001 - June 30, 2002 (n=110 districts)**

Type of Procedure	Monthly Rate Per 1,000 Students		
	Median District	Lowest Value	Highest Value
Glucometer Testing	32.6	9.2	164.8
Blood Pressure Check	8.8	0.3	59.2
Catheterization/Catheter	5.1	0.0	28.8
Nasogastric/Gastric Tube	4.3	0.0	68.8
Peak Flow Check	3.8	0.0	71.6
Nebulizer Treatment	1.7	0.1	22.5
Suction	1.1	0.0	55.0
Chest Physiotherapy	0.7	0.0	8.6
Urostomy Care	0.5	0.0	3.0
Tracheostomy Care	0.5	0.0	7.1
Colostomy/Ileostomy Care	0.4	0.0	21.0
Oxygen Care	0.2	0.0	12.9

\* Among those districts performing the procedure at least once.

In addition, school nurses in these 110 districts reported performing a wide range of other medical and nursing procedures. The following table lists the most frequently mentioned procedures:

***“Other” Procedures Performed by School Nurses  
September 1, 2001 - June 30, 2002 (n=110 districts)***

Fluoride Rinse	Neurological Assessment
Pulse Oximetry	Temperature Check
Eye Irrigation	Staff Blood Pressure
Seizure Care	Skin Checks
Brace Care	Suture Care
Ketone Testing	Otoscopy
Respiratory Assessment	TB Testing
Lung Auscultation	Inhaler Technique
Oxygen Saturation	Splint/Cast Care
Wound Care	Tympanography
Oral Feedings	Insulin Pump Monitoring
Salt Rinses	Heat/Cold Application
Incontinence Care	ROM Exercises
Anorexia Monitoring	ENT Assessment
Weight Monitoring	Body Jacket Care

***Linkages***

ESHS school systems identified students without primary care and, in consultation with their families, referred them to appropriate health care services. School systems also provided many referrals to students’ existing primary care providers. During the ten months of the 2001-2002 school year, 110 participating districts reported the following:

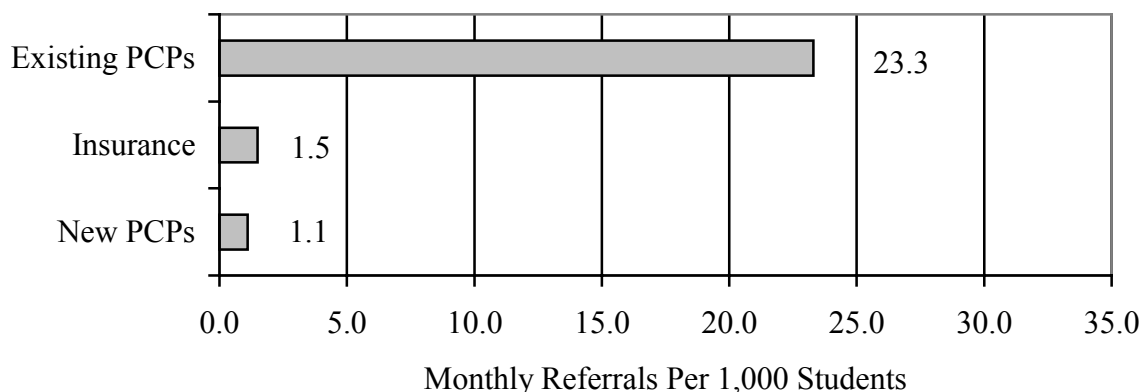
- A total of **181,163** students requiring primary care services were identified and referred to primary care providers. These referrals included:
  - **13,018** referrals for students without primary care providers, and
  - **168,145** referrals for students with existing primary care providers.
- The average number of referrals per month for the median district was **3.3 students per month** for new primary care providers (range: **0.0 to 349.0** students per month), and **75.6 students per month** for existing primary care providers (range: **0.0 to 2,953.0** students per month).
- The median monthly referral rate *per 1,000 students* to new primary care providers was **1.1 per 1,000 students** per month (range: **0.0 to 8.0**); the median monthly rate for referrals to existing primary care providers was **23.3 per 1,000 students** per month (range: **0.0 to 83.9**).

In addition, 109 districts reported that they referred a total of **13,716** uninsured students to health insurance providers (including MassHealth and Children’s Medical Security Plan) during the 2001-2002 school year. The average number of referrals per month for the median district was **4.9** students per



month (range: **0.0** to **176.9**). The median monthly referral rate per 1,000 students to health insurance providers was **1.5 per 1,000 students** per month (range: **0.0** to **104.1**).

**Primary Care and Insurance Provider Referral Rates  
September 1, 2001- June 30, 2002 (n=110 districts)**



**Nursing Case Management**

Data from the monthly activities report revealed that, beyond providing direct care to students, school nurses spent a significant portion of their day performing case management duties that included communication with families, other school staff, and community health care providers about student health concerns. During the school year, school nurses from **110** districts conducted:

- a total of **1,028,794** *health counseling and education encounters with parents* (including phone calls, meetings, and conferences, but excluding home visits), with the median district reporting **622.8** encounters per month (range: **51.3** to **7,666.4** encounters per month);
- a total of **4,509** *home visits*, with the median district reporting **.6** home visits per month (range: **0.0** to **47.0** home visits per month);
- a total of **411,018** *phone calls, meetings, and conferences with other school staff* about student health issues, with the median district reporting **228.7** contacts per month (range: **0.0** to **2,813.2** meetings per month);
- a total of **111,233** *phone calls with other agencies and health providers* about student health issues and a median per district of **45.3** phone calls per month (range: **0.0** to **783.5** phone calls per month).

The following chart shows case-management activity levels *per school nurse FTE per month* across the 110 participating districts:

**Nursing Case Management Activities:  
Number of Student-Health Related Activities Per Month Per Nurse FTE  
September 1, 2001 - June 30, 2002 (n=110 districts)**

Type of Activity	Median (Per FTE)	Lowest Value (Per FTE)	Highest Value (Per FTE)
Calls, meetings, & conferences with parents	74.5	16.2	356.2
Calls, meetings, & conferences with staff	26.4	0.0	169.2
Phone calls with agencies/providers	5.5	0.0	44.8
Home visits to families	0.1	0.0	6.2

For children with special health care needs, nursing case management involves the development of Individual Health Care Plans (IHCPs) designed to maximize their potential for learning. An IHCP, usually developed by the school nurse in conjunction with the student's family, the school physician, other school staff, and relevant community health care providers, is an individualized care plan that stipulates a student's specific medical, nursing, emergency care, and educational needs while in school during the school day. IHCPs are reviewed on a regular basis to ensure that students receive the appropriate health care they need during the school day.

During the 2001-2002 school year, 110 Enhanced sites reported:

- a total of **18,721 new** IHCPs for the year, with the median district reporting **9.5 new** IHCPs per month (range: **0.2 to 242.0** IHCPs per month);
- a median, per full-time school nurse, of **1.1 new** IHCPs per month (range: **0.1 to 4.8** IHCPs per month);
- a total of **13,175.9 ongoing** IHCPs per month, with the median district reporting **81.7 ongoing** IHCPs per month (range: **1.2 to 1,099.2** IHCPs per month);
- a median rate, per full-time school nurse, of **8.1 ongoing** IHCPs per month (range: **0.6 to 47.0** IHCPs per month).

## Health Education and Tobacco Prevention

School nurses are often called upon to deliver health education in the classroom. In this teaching role they provide information to students on topics such as nutrition education, injury prevention, and human growth and development. Over the ten-month period, school nurses in 110 districts delivered:

- a total of **26,456** classroom presentations to students, with the median district reporting **8.9** presentations per month (range: **0.0 to 806.9** presentations per month);
- a median rate of **0.9** classroom presentations per month per full-time nurse (range: **0.0 to 20.3** presentations per month per school nurse).

In addition to classroom presentations, nurses in 110 districts provided individual assistance and counseling on nutritional issues to **10,976** students per month. The median district provided nutritional assistance to **47.0** students per month (range: **1.1 to 1,123.4**). The median rate per 1,000 students was **13.0** students per 1,000 enrolled students per month.

As part of the Massachusetts Tobacco Control Program, the Enhanced School Health Services Program was designed to incorporate tobacco use prevention and cessation activities into existing school health services programs. Accordingly, ESHS districts conducted targeted tobacco education activities over the course of the project that included, among other things, at least one survey of student tobacco use. In their most recent efforts, **97** school systems surveyed a total of **99,634** students on their tobacco use, equivalent to **19.7%** of the total student enrollment in these districts.

In addition, during the 2001-2002 school year, school nurses in ESHS districts provided the following tobacco prevention/cessation services:<sup>12</sup>

- a total of **52,737 students and 2,651 adults** participated in tobacco prevention education groups in 72 districts, with the median district reporting **14.8** individuals participating per month (range: **0.1 to 1,237.0**);
- a total of **7,918 students and 372 adults** participated in tobacco cessation groups in 56 districts, with the median district reporting **2.4** individuals participating per month (range: **0.1 to 240.5**);
- a total of **12,401 students and 1,680 adults** received individual tobacco cessation counseling in 91 districts, with the median district reporting **3.8** individuals participating per month (range: **0.1 to 263.0**);
- a total of **3,470 students and 458 adults** were referred to other tobacco prevention/cessation services in 75 districts, with the median district referring **1.2** individuals per month (range: **0.1 to 123.7** individuals).

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<sup>12</sup> Note: The median was calculated in each case only from those districts providing each type of service.

## Summary

The information collected by the Enhanced School Health Services Program provides a valuable snapshot of school nursing practice in a diverse but non-representative cohort of Massachusetts public schools. The data reveal that school nurses perform a wide array of duties -- direct care, health education, administrative case management, and policy/program development and oversight -- on behalf of students whose health needs range from routine to serious and complex.

Analysis of the ESHS program data for the school year beginning September, 2001 and ending June, 2002 showed the following:

- 110 ESHS school districts reported a combined total of 7,146,585 student health encounters.
- Students went to see the school nurse at a (median) rate of 1.3 health encounters per student each month. There was substantial variability between schools, with a substantial difference between the district with lowest encounter rate (0.7) and the district with the highest encounter rate (3.2).
- Rates for early dismissal due to illness have a seasonal pattern, peaking in the winter months (January, February, and March) and then declining in the spring months. The pattern for early dismissals due to injury is almost the reverse, peaking in the fall, declining in the winter when outdoor activities decline, and rising again in the spring. The pattern for emergency referrals resembles that for early dismissals due to injury.
- The majority (67.9%) of the students taking prescription medications took them on an as-needed (PRN) basis, rather than on a daily basis.
  - Among students on daily prescription medications, psychotropic medications were by far the most common (13.3 per 1,000 enrolled students, for the median district).
  - Among students taking as-needed (PRN) medications, asthma medications were the most common (26.3 per 1,000 enrolled students, for the median district).
- School nurses performed 25.3 medical procedures per full-time nurse each month (median rate). Glucometer testing and blood pressure testing were the procedures most frequently performed.
- Tobacco prevention programs reached substantial numbers of individuals, although activity levels varied widely across districts:
  - Participation was much higher in *individual* tobacco cessation counseling (12,401 students and 1,680 adults) than in *group* cessation counseling (7,918 students and 372 adults).
  - Participation was much higher in group activities focused on *education* (52,737 students and 2,651 adults) than group activities focused on *counseling* (7,918 students and 372 adults).

Future data collection efforts will seek to expand upon current knowledge of health needs in the school setting. Continued refinements in data collection efforts will more accurately capture school nursing and other school health activity. Over time, information on trends in school health encounter activity may assist school nursing staff in improving their delivery of prevention education and intervention services to the school community. However, the next step in evaluation of the program will focus on health status and educational outcomes.

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# APPENDIX A

## Enhanced School Health Services Program Districts: 2001-2002

DISTRICT NAME	ADMINISTRATION	REGION	TYPE	STUDENTS
Amesbury	Town	NE	R	2,826
Amherst-Pelham	Regional Academic	W	R	4,097
Ashburnham-Westminster	Regional Academic	C	R	2,459
Ashland	Town	Metro West	R	2,531
Avon	Town	SE	R	741
Barnstable	Town	SE	R	6,136
Belchertown	Town	W	R	2,385
Berkshire Hills	Regional Academic	W	R	1,536
Boston	City	Boston	C	62,414
Bourne	Town	SE	R	2,564
Braintree	Town	Metro West	R	4,906
Bridgewater-Raynham	Regional Academic	SE	R	6,062
Brockton	City	SE	C	16,753
Brookline	Town	Boston	R	5,960
Cambridge	City	Metro West	R	7,046
Canton	Town	Metro West	R	2,791
Central Berkshire Regional (Dalton)	Regional Academic	W	C	2,309
Chelsea	City	Boston	C	5,749
Chicopee	City	W	R	7,609
Clinton	Town	C	R	1,873
Cohasset	Town	Metro West	R	1,367
Dedham	Town	Metro West	R	3,019
Douglas	Town	C	R	1,417
East Longmeadow	Town	W	C	2,624
Fairhaven	Town	SE	R	2,324
Fall River	City	SE	R	12,102
Foxborough	Town	Metro West	R	2,835
Framingham	Town	Metro West	C	8,391
Frontier	Regional Academic	W	R	1,668
Gardner	City	C	R	3,155
Gateway	Regional Academic	W	R	1,469
Georgetown	Town	NE	R	1,601
Gloucester	City	NE	R	4,119
Granby	Town	W	R	1,087
Hadley	Town	W	R	634
Hampden-Wilbraham	Regional Academic	W	R	3,873
Hanover	Town	SE	R	2,671

### Appendix A continued

DISTRICT NAME	ADMINISTRATION	REGION	TYPE	STUDENTS
Harwich	Town	SE	R	1,527
Haverhill	City	NE	R	8,631
Holliston	Town	Metro West	R	3,121
Holyoke	City	W	R	7,160
Hudson	Town	Metro West	C	2,648
Lawrence	City	NE	C	12,700
Leominster	City	C	R	6,075
Lexington	Town	Metro West	R	6,010
Lowell	City	NE	R	15,164
Ludlow	Town	W	R	2,947
Lynn	City	NE	R	15,247
Malden	City	NE	R	5,468
Mansfield	Town	SE	R	4,547
Marblehead	Town	NE	R	2,853
Masconomet Regional (Topsfield)*				
Boxford Elementary	Town	NE	R	1,002
Masconomet	Regional Academic	NE	R	1,849
Middleton Elementary	Town	NE	R	718
Topsfield Elementary	Town	NE	R	621
Mashpee	Town	SE	R	2,048
Medford	City	NE	R	4,481
Melrose	City	NE	R	3,449
Milford	Town	C	R	3,915
Milton	Town	Metro West	R	3,731
Minuteman Voc. Tech. Reg. (Lexington)	Regional Voc. Tech.	Metro West	C	730
Mohawk Trail Regional (Buckland)	Regional Academic	C	R	1,688
Mount Greylock School Union (Lanesborough)	Town	W	R	554
Nashoba	Regional Academic	C	R	3,014
Natick	Town	Metro West	R	4,398
Needham	Town	Metro West	R	4,498
New Bedford	City	SE	R	14,787
Newburyport	City	NE	R	2,322
Newton	City	Metro West	R	11,313
North Andover	Town	NE	R	4,286
North Attleborough	Town	SE	R	4,705
Northampton	City	W	R	2,924
Northampton Smith Voc. & Agricultural High	Voc. & Agricultural	W	R	446
North Berkshire Union (Clarksburg)	Town	W	R	378
Northboro-Southboro	Regional Academic	Metro West	R	4,636
Northbridge	Regional Academic	Metro West	R	2,440
Norwood	Town	Metro West	R	3,555

## Appendix A continued

Palmer	Town	W	R	2,182
DISTRICT NAME	ADMINISTRATION	REGION	TYPE	STUDENTS
Pioneer Valley Regional (Northfield)	Regional Academic	W	R	1,039
Pittsfield	City	W	R	6,726
Plymouth	Town	SE	R	9,133
Provincetown	Town	SE	R	296
Quincy	City	Metro West	R	8,677
Randolph	Town	Metro West	R	4,034
Rockland	Town	SE	R	2,882
Rockport	Town	NE	R	1,043
Salem	City	NE	C	5,030
Sandwich	Town	SE	R	4,099
Shirley	Town	C	R	749
Somerville	City	Metro West	R	5,800
Southbridge	Town	C	R	2,689
Southern Berkshire	Regional Academic	W	R	1,012
Southwick Tolland	Regional Academic	W	R	1,869
Springfield	City	W	C	25,091
Stoughton	Town	SE	R	4,138
Swansea	Town	SE	R	2,257
Taunton	City	SE	R	8,172
Triton (Byfield)	Regional Academic	NE	R	3,488
Wachusett	Regional Academic	C	R	6,796
Walpole	Town	Metro West	R	3,654
Waltham	City	Metro West	R	4,889
Ware	Town	W	R	1,343
Watertown	Town	Metro West	R	2,526
West Bridgewater	Town	SE	R	1,008
Westborough	Town	Metro West	R	3,373
Westfield	City	W	R	6,806
Westford	Town	NE	R	4,685
Weston	Town	Metro West	R	2,307
Weymouth	Town	Metro West	R	7,102
Whitman-Hanson	Regional Academic	SE	R	4,549
Wilmington	Town	Metro West	R	3,713
Winthrop	Town	Boston	R	2,084
Worcester	City	C	R	25,871
TOTAL				566,801

Notes:

1. “Type” refers to type of ESHS award: “R” means that the district is a part of the basic or regular ESHS program; “C” means that the district is a part of the ESHS With Consultation program.



2. “Region” refers to the six standard geographic regions defined by the Executive Office of Health and Human Services (EOHHS): “W” = Western, “C” = Central, “NE” = Northeastern, and “SE” = Southeastern. “Metro West” and “Boston” are self-explanatory.
3. For consistency with prior reports, data from Boxford, Middleton, Topsfield, and Masconomet Regional were combined for purposes of data analysis.

#### **Enrollment by Race: ESHS Program and State-Wide**

<b>Race</b>	<b>ESHS</b>	<b>State-wide</b>	<b>Difference</b>
<b>African American</b>	12.6%	8.6%	4.0%
<b>American Indian</b>	0.3%	0.3%	0.0%
<b>Asian</b>	5.7%	4.5%	1.2%
<b>Hispanic</b>	15.6%	10.8%	4.8%
<b>White</b>	65.8%	75.7%	-10.0%
	100.0%	100.0%	

## **APPENDIX B**

### **Enhanced School Health Services Program Minimum Deliverables**

Infrastructure for the comprehensive School Health Program strengthened.

1. Quarterly meetings of School Health Advisory committee.
2. Implementation of school district and building emergency plan by Year 1.
3. 100% students requiring prescription medications during the day have medication administration plan by Year I.
4. Role of school health services in student support/intervention program established.
5. Minimum of 1 support group operational in addition to Tobacco by Year II.
6. Annual student health needs assessment conducted and analyzed.
7. A selected number of policies reviewed, revised and approved annually.
8. Position descriptions for school health personnel developed during Year I.
9. 100% of students with special health care needs have individualized health care plans by end of Year I.
10. Marketing brochure completed during Year II.

Comprehensive health education program, including tobacco prevention and cessation, strengthened.

1. Documentation of enforcement activities related to violation of the tobacco-free school policy yearly or enforcement plan for tobacco-free school policy implemented in Year I.
2. Completion of annual tobacco use assessment.
3. Establishment of target goal for reduction in tobacco use, Year II.
4. Documentation of coordinated planning with health education coordinator.
5. Participation in a local community-based coalition addressing child and adolescent health.

Students linked to primary care providers, other community health providers and community prevention programs, and referred to insurance plans if uninsured.

1. Design and implementation of on-going process for identifying primary care providers and health insurers (including HMOs) serving the current student population and referral mechanisms for children/families, Year I.
2. 90% of all students will have their primary care provider and insurance carrier identified by end of Year II.
3. 75% of all students identified as lacking a primary care provider will be referred to a provider within the first year, with incremental increases annually.
4. 100% of uninsured eligible children and adolescents referred to Children's Medical Security Plan (CMSP) or MassHealth for enrollment by end of Year I.

## **Appendix B continued**

Management information system implemented.

1. 100% of the students' health records will be computerized by Year II.
2. Completed annual report on data specific to the program.

Development of quality improvement process with identification of projects to document the effectiveness and efficiency of the school health service program.

1. In relation to efficiency, work with BFCH to determine formula to calculate cost per encounter.
2. Identification of types of student encounters (health assessment, nursing care, nursing treatment, first aid, etc.) by end of Year I.
3. Develop one health status improvement measure such as % of six graders appropriately immunized, or decrease to less than 10% number of students who use tobacco, etc.